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The Honorable Chet Holifield Chairman, Joint Committee on Atomic Energy Congress of the United States Hashington 25, D. C.

Dear Mr. Holifield:

Your letter of June 23rd requested that the Joint Gommittee be advised of any information we have regarding mussion interest in and development of nuclear-electrical propulsion systems for space application. In addition you requested our evaluation of an article appearing in the June 22, 1961 issue of <u>Nucleonics Week</u> in which it was stated that 'On the basis of recent intelligence reports, mussic is expected to have a nuclear-electrical propulsion system of several hundred kilowatts operational in 1964".

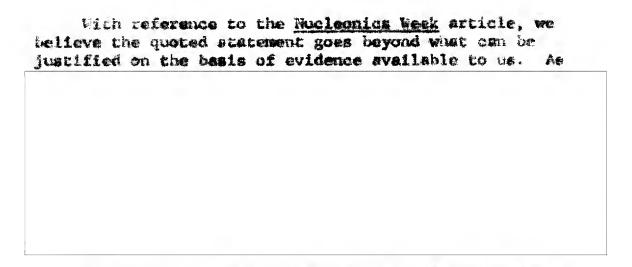
Soviet work on ion propulsion systems for space applications was surveyed in one of our recent publications (CIA OSI-SM/61-1, 26 April 1961). I understand that this publication was made available to the Joint Committee shortly before your letter was received.

This report includes our latest information on ion propulsion systems. In addition, there are indications of Soviet interest in and basic research applicable to other "exotic" propulsion systems for space applications, e.g., plasma and arc-jet propulsion. Our information is too limited to predict any time period for introduction of such systems, but we expect this to occur several years after flight-testing of ion-propulsion systems.

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We have not identified any specific Soviet effort to develop a reactor which could power an ion propulsion system. Their early success in schieving high temperature operation with the BR-5 fast plutonium reactor, and the lack of published subsequent developments in this field suggest that such a program may be underway, but positive proof is not available. Assuming that they do not meet unanticipated problems in scaling down the BE-5 to a size and power suitable for ion propulsion, and assuming that the start of this development coincided with the reported start of engine instrumentation work, the Soviets could probably meet the reported time schedule of the instrumentation work. Their development problems would probably be eased by the large carrying capacity of their launch vehicles. Although possible, it is unlikely that power sources in the "several hundred kilomett" range would be available for flight test in the 1964 period. Furthermore, many troubles may be encountered in their reactor miniaturisation efforts.

In summary, we do not believe that our evidence is firm enough to justify an unqualified estimate that the Soviets will flight-test a large ion propulsion system in 1964.

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Moreover, unanticipated development problems could seriously

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delay their actual flight-test date. However, the firm evidence of Soviet research on ion engines and the information on in-flight instrumentation provide sufficient indication of Soviet development of a large system to warrant our continued interest and attention.

Sincerely,

1 - Legislative Counsel w/basec

SIGNED C. P. Cabell General, USAF 25X1 Deputy Director ORIGINATED BY: Chief, Nuclear Energy Division/OSI **CONCURRENCES:** 11 JUL 1961 Assistant Director/Scientific Intelligence Date Legislative Counsel 106114 Deputy Director/Intelligence Date OSI/NED/ :pam: (7 July 1961) Distribution Orig. & 1 - Addressee 1 - Exec. Reg.

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MEMORANDUM FOR: DEPUTY DIRECTOR

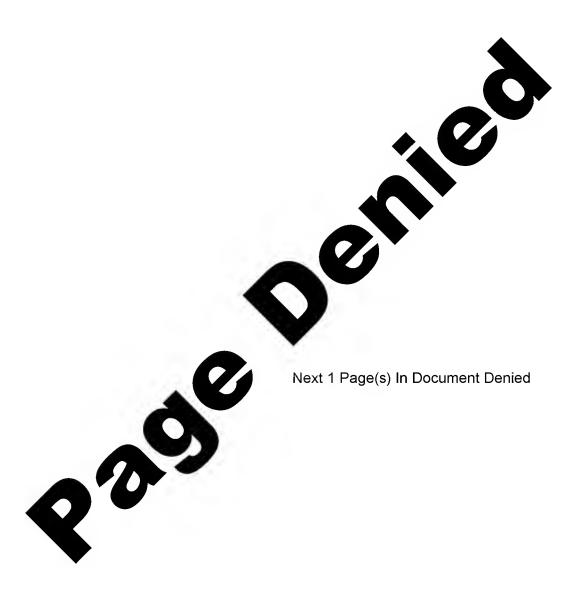
Attached is a suggested reply which has been prepared by OSI in response to Representative Holifield's letter concerning an article in Nucleonics Week on nuclear-electrical propulsion. As explained in Dr. Scoville's briefing paper, we forwarded to the Joint Committee a Scientific Intelligence Memorandum on this subject after Mr. Holifield signed his letter but before it was received here. In view of your recent conversation with Holifield, I believe it would be appropriate for you to sign this letter

LAWRENCE R. HOUSTON
General Counsel
(DATE)
13 JUL 1961

FORM NO. 101 REPLACES FORM 10-101 WHICH MAY BE USED.

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11 JUL 1961

MEMORANDUM FOR: Legislative Counsel/Office of

General Counsel

SUBJECT:

Reply to Congressman Holifield

on Soviet Ion Propulsion

1. In accordance with your request of 3 July 1961, enclosed is a proposed reply to Congressman Holifield for the signature of General Cabell.

2. This proposed reply differs in some respects from the NASA report on Soviet ion propulsion work referred to by Congressman Holifield. Therefore, it is suggested that a copy of the inquiry from Congressman Holifield and the enclosed reply be sent to NASA.

HERRERT SCOVILLE, JR.
Assistant Director
Scientific Intelligence

Enclosure:

Proposed reply to Congressman Holifield

